

## Weld Evaluation

The laboratory has experience and expertise in the welding sector:

**PQR welding procedures** according to EN ISO 15614 and ASME IX and welders qualifications according to EN ISO 9606 and **AWS D17.1**.

## Failure Analysis

AQC performs investigations on the causes (Failure Analysis) that led to the failure of a component through visual examination, chemical, physical and metallographic and SEM.

## Corrosion tests

The laboratory has extensive experience with corrosion tests on metals and paints

**Petrochemical and oilfield Hydrogen Embrittlement** tests according to: NACE TM0284: H.I.C; NACE TM0177: SSC;

**Intergranular Attack** tests: ASTM A262-A Oxalic Acid Etch Test, ASTM A262-B Ferric sulfate-sulfuric acid test, ASTM A262-C Nitric acid test (Huey test), UNI EN ISO3651-1 Corrosion in nitric acid by measuring mass loss; ASTM A262-E Copper-copper sulfate-sulfuric acid test Strauss;

**Pitting and crevice** corrosion ASTM G48 / A-B



## A.Q.C s.r.l.

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The updated official list of accredited tests is available on our website [www.aqcsrl.it](http://www.aqcsrl.it) or at [www.accredia.it](http://www.accredia.it) laboratory with accreditation number 1300 and [www.eAudiNet.com](http://www.eAudiNet.com) — Online QML (Qualified Manufacturer Listing).



Lab. 1300

Member of CISO Federation



CERTIFIED MANAGEMENT SYSTEM  
**ISO 9001 - ISO 14001**

NADCAP Test Codes:  
F3, A, C, N, XN, M1, M2,  
M3, Q, Q1, Z, Z3, Z4,  
L0, L1, L2, L3, L5, L5X,  
L6, L7, L10, L11, L13, XL,  
Evaluation of Welds



Administered by PRI

**ACCREDITED**

Materials Testing Laboratory



## Laboratory Testing Materials

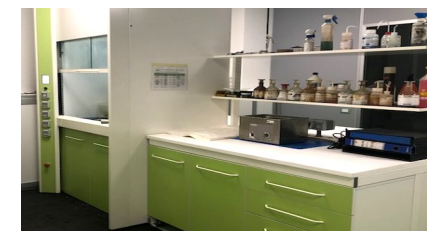
**AQC is a provider of materials testing and product qualification testing** accredited **NADCAP** and **ISO/IEC 17025**.

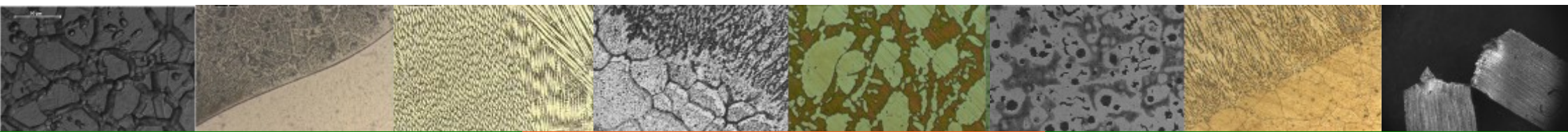
## Materials Testing Services for the Aerospace Sector

Mechanical Testing, Corrosion, Fractography, Material identification, Macroscopic and Microscopic evaluation, Weld Testing, Hardness, Metallography, Stress rupture.

## Product Qualification Testing Services for the Aerospace

Environmental testing, Humidity, Salt Fog & Corrosion, Acidic Atmosphere, High/Low Temperature, Thermal Shock, Solar and UV Radiation.





## Mechanical Testing

Our aerospace mechanical testing capabilities includes the main tests on material and welds

**Tensile test** on standard specimens or on finished products (hooks, chains, bolts) even at high temperatures up to 800 °C.

**Bending** on sheets, tubes, welds.

**Charpy Impact** from room temperature up to -196 °C.

**Hardness** Vickers, Brinell, Rockwell.

**Stress Rupture** up to 700°C;

The A.Q.C., equipped with its own mechanical workshop, is able to independently obtain the specimens from the samples presented by the Customer



## Chemical analyses



Examinations performed with Atomic Emission Spectroscopy on steels, alloys and aluminum.

Chemical microanalysis with SEM-EDS

## Metallographic examinations

The metallographic laboratory, modernly equipped, has all the necessary tools to conduct **macro and microstructural tests, hardness and micro hardness, SEM-EDS analysis.**

**Macrographic examinations** performed at the stereomicroscope on welded structures or fracture surfaces.

**Micrographic examinations:** ASTM E112 austenitic grain size; classification of graphite in cast iron; Phase volume fraction as by ASTM E562; non-metallic inclusions ASTM E45.

**Microindentation** Hardness Test in accordance with ASTM E384

**Near Surface Evaluation** of High Temperature Oxidation, Intergranular Attack, Alloy Depletion, Case Depth, Nitriding

**Evaluation of Eutectic Melting,** Clad Alloy Depletion, End Grain Pitting ASTM F2111

**Mechanical Hydrogen Embrittlement** test in accordance with **ASTM F519.**



## Environmental Testing

**Humidity Test:** Our chambers test up to 98% relative humidity, to simulate any type of humid environment cycling temperature according to MIL STD-810, ISO 6270-1/2, ASTM D2247, MIL-PRF 85285, specific to customers' requirements.

**Salt spray test:** conducted in a closed chamber that can be adjusted to create a variety of corrosive environments (NSS),(AASS),(CASS) according to ASTM B117,ASTM B368, ISO 9227.

**Fluid resistance:** when immersed in lubricating oil, hydraulic fluid or aviation fuel the coating shall not exhibit any blistering or other coating defects according to MIL-PRF 85285 or other standards.

**Solar Radiation:** Accelerated test MIL-STD 810 in xenon arc chamber (ASTM G155) or fluorescent UV lamps (ASTM G154) reproduces the damage caused by sunlight, simulating dew and rain with condensing humidity and/or water spray and elevated temperatures. Coating, after exposure, shall exhibit conform Gloss Unit and reduced Color difference  $\Delta E$  compared to FED-STD 595.

**Acidic Atmosphere:** according to MIL-STD-810 to determine the resistance of materials and protective coatings to corrosive atmosphere.

**High/Low Temperature:** test to evaluate the effect of low/high temperature on materials or coating, from -100 to 180°C also by rapid cycling.

